

A framework for conservation and restoration management of nearshore ecosystems in Puget Sound

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Ecosystem-scale conservation management in Puget Sound confronts the ecological challenge of understanding a complex and diverse system and the political challenge of coordinating multiple managers. In order to reach its potential, ecosystem science must create ecologically and operationally robust models. In this analysis, I propose a framework for understanding and management that accepts these complexities and provides clear direction for making adaptable management decisions. The framework is developed conceptually and through the application of nonmetric multidimensional scaling ordination to nearshore habitat assessment in Skagit Bays, Washington.

Results indicated that habitat patterns, as described by thirty-six biophysical components, could be adequately represented in three-dimensions using NMS. Exploration of environmental stressors illustrated that percent of the shoreline with modifications and agricultural land uses were related to differences in nearshore habitats. Forage fish also occupied a distinct ecological space within the ordination that was different from hypothetically degraded habitats.

This analysis offers a simplified model of nearshore ecosystems without dismissing natural complexity and establishes a consistent and transferable framework that can be adapted for use throughout Puget Sound. The framework offers to enhance management credibility and coordination by establishing a conceptually defensible, cohesive and adaptable illustration of a complex ecosystem.